

REMEDIAL SITE ASSESSMENT DECISION - EPA REGION 1

Site Name: Weston Landfill EPA ID#: CTD980521090

Alias Site Names: _____

City: Weston County or Parish: _____ State: CT

Refer to Report Dated: 2-26-96 Report type: SIP

Report developed by: CDM-FPC/COE

DECISION:

☐ 1. Further Remedial Site Assessment under CERCLA (Superfund) is not required because:

☐ 1a. Site does not qualify for further remedial site assessment under CERCLA (Site Evaluation Accomplished - SEA)

☐ 1b. Site may qualify for further action, but is deferred to:

☐ RCRA
☐ NRC

☒ 2. Further Assessment Needed Under CERCLA:

2a. (optional) Priority: ☒ Higher ☒ Lower

2b. Activity Type:

☐ PA
☐ SI

☒ ESI
☐ HRS evaluation

☐ Other: _____

DISCUSSION/RATIONALE:

Groundwater and surface water contamination and impacts on private wells and wetlands have been documented

Report Reviewed and Approved by: Dor Smith Signature: Dor Smith Date: 3-19-96

Site Decision Made by: Dor Smith Signature: Dor Smith Date: 3-19-96

Final Site Inspection Prioritization Report

Weston Landfill

Weston, Connecticut

Prepared for

**U.S. ENVIRONMENTAL PROTECTION AGENCY, Region I
Waste Management Division
Boston, MA**

Delivery Order No.: 012

CERCLIS No.: CTD980521090

TDD No.: 9405-17-CCX

Contract No.: DACW33-91-D-0004

Document No.: 6101-012-FR-4915

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Date Prepared: February 26, 1996

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INTRODUCTION

CDM Federal Programs Corporation (CDM Federal), in coordination with the New England Division, U.S. Army Corps of Engineers (ACOE) was requested by the U.S. Environmental Protection Agency (EPA) Region I Waste Management Division to perform a Site Inspection Prioritization (SIP) of the Weston Landfill property in Weston, Connecticut. Tasks were conducted in accordance with the ACOE Contract No. DACW33-91-D-0004, the SIP scope of work dated April 28, 1994, and technical specifications provided by the ACOE under Delivery Order No. 012, which was issued to CDM Federal on July 20, 1994. A Preliminary Assessment (PA) was prepared by the Connecticut Department of Environmental Protection (CTDEP) in 1984. On the basis of the information provided in the PA report, the Weston Landfill Site Inspection (SI) was initiated. The SI report was prepared by NUS Corporation (NUS) in 1991. Updated information encountered during the SIP process is included in this report.

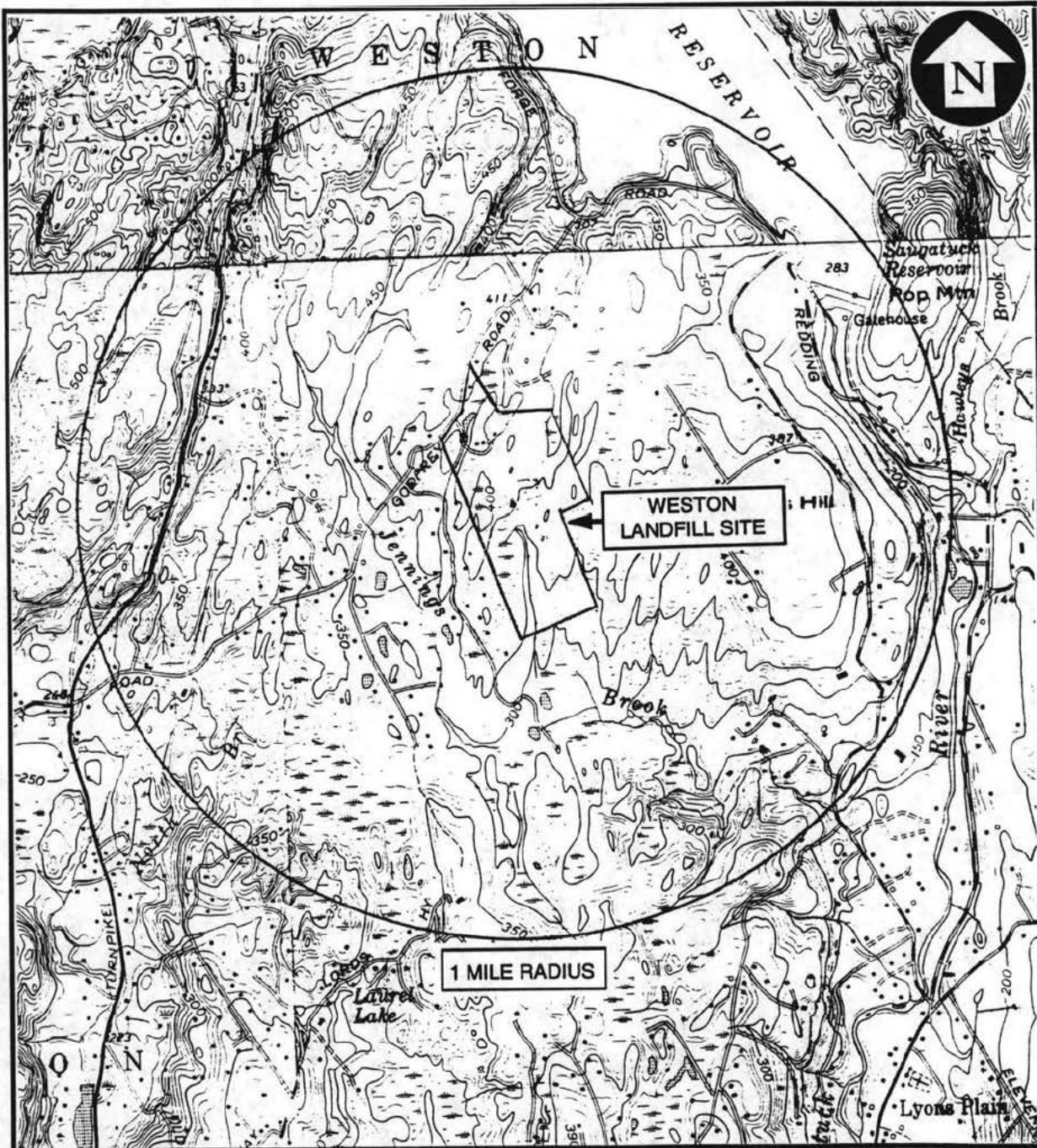
Background information used in the generation of this report was obtained through file searches conducted at CTDEP, telephone interviews with town officials, conversations with persons knowledgeable of the Weston Landfill property and conversations with other federal, state, and local agencies. Additional information was collected during the CDM Federal onsite reconnaissance on May 25, 1995, and environmental sampling on July 19, 1995.

This package follows the guidelines developed under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, commonly referred to as Superfund. However, these documents do not necessarily fulfill the requirements of other EPA regulations such as those under the Resource Conservation and Recovery Act (RCRA) or other federal, state, or local regulations. SIPs are intended to provide a preliminary screening of sites to facilitate EPA's assignment of site priorities. They are limited efforts and are not intended to supersede more detailed investigations.

SITE DESCRIPTION

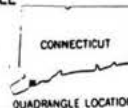
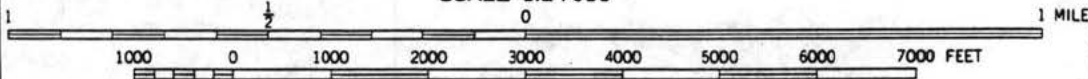
The Weston Landfill is located on Godfrey Road in Weston, Fairfield County, Connecticut (latitude 41°14'30"N, longitude 73°21'52"W) (see Figure 1: Location Map) [21]. In 1965, the Town of Weston purchased the property and operated a municipal landfill until closure in 1980. The town has been operating a transfer station on the property since 1978. The landfill has accepted septic, municipal and industrial wastes including scrap metal, demolition wastes, lead basins, and iron oxide sludge [11].

The landfill portion of the property occupies approximately 8 acres of a 53-acre property [11,21]. Vehicular access is controlled by an access road and gate entering the landfill from



Base Map is a portion of the following 7.5' U.S.G.S. Quadrangles: Bethel, CT 1970; Botsford, CT 1969; Norwalk North, CT 1960; Westport, CT 1961.

SCALE 1:24 000



LOCATION MAP **WESTON LANDFILL** **WESTON, CONNECTICUT**



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Figure 1

Godfrey Road located to the west of the landfill area (see Figure 1: Site Sketch with Previous Sampling Locations). The remaining perimeter of the property is unrestricted. A dog pound is located approximately 30 feet to the west of the landfill area. Small wetlands and woods border the property to the north. Residences extend along Ravenwood Drive on the southwestern border of the property and along Catbrier Road on the eastern border of the property. Woodlands line the property to the east. An unnamed pond is located to the north of the entrance road of the landfill. The pond drains south under the entrance road, eventually entering a wetland area south of Ravenwood Drive. Overall surface water runoff drains to the southwest of the landfill. Land use in the vicinity of the Weston Landfill is generally rural and residential. The nearest residence and private well are located approximately [REDACTED] feet [REDACTED] of the Weston Landfill [1].

OPERATIONAL AND REGULATORY HISTORY AND WASTE CHARACTERISTICS

From 1935 to 1965, Ansen Morton owned the property and operated a burning dump. Details of his activities are unknown; however, the SI report indicates that his dump accepted industrial wastes [11].

The town of Weston purchased the property in 1965 and operated the landfill accepting industrial, municipal and septic wastes [11].

Investigations regarding groundwater contamination by the landfill began in 1973 due to complaints from nearby residents regarding the quality of their drinking water based on odor, color, and turbidity. In August 1973, at the request of the town, Geraghty & Miller, Inc. investigated the effect of landfill leachate on groundwater quality in the town of Weston. The investigation concluded that "the groundwater under an area of Ravenwood Drive (located to the southwest of the landfill) almost certainly has been contaminated by leachate from the Town landfill" [8]. In 1974, a court ordered the town to supply water to the affected residents while further investigations were conducted [8,11].

In 1975, the Connecticut Department of Health (CTDOH) collected surface water samples from the landfill [11]. However, results were not available in state files.

In 1976, two groundwater supply wells were installed [REDACTED] of Godfrey Road and the landfill to serve 30 homes on Ravenwood Drive. From 1975 to 1980, CTDEP noted continuous leachate problems as well as the probability for groundwater pollution problems [11].

In 1980, the town closed the landfill and subsequently applied for a permit to operate a solid waste transfer station on the property. The town continues to operate a transfer station adjacent to the north side of the landfill. Town residential waste has subsequently been delivered to the Archer Landfill in the town of Shelton for disposal [11].

In 1984, CTDEP conducted a PA at the Weston Landfill. In 1990, NUS conducted an SI which included collecting three soil samples and four sediment samples from the landfill. All samples were analyzed via EPA's Contract Laboratory Program (CLP) for volatile organic compounds (VOCs), extractable organic compounds, and inorganic elements. Several organic compounds



SITE SKETCH WITH PREVIOUS SAMPLING LOCATIONS
WESTON LANDFILL
WESTON, CONNECTICUT

4

and inorganic analytes were detected in sediment samples SD-01, SD-03 and SD-04 at concentrations exceeding 3 times the background (SD-02) concentrations, including lead, 2-butanone, and chrysene [11].

Table 1 presents identified structures or areas on the Weston Landfill property that are potential sources of contamination, the containment factors associated with each source, and the relative location of each source.

TABLE 1
Source Evaluation for
Weston Landfill

Potential Source Area	Containment Factors	Spatial Location
Landfill	unlined, 2 foot soil cover	approximately 8 acres located in center of property.

[11]

Table 2 summarizes the types of potentially hazardous substances that have been disposed of, used, or stored on the property.

TABLE 2
Hazardous Waste Quantity for
Weston Landfill

Substance	Quantity or Volume/Area	Years of Use/Storage	Years of Disposal	Source Area
Industrial waste	approximately 8 acres	1935 - 1980	1935 - 1980	Landfill
Septic waste	approximately 8 acres	1965 - 1980	1965 - 1980	Landfill
Municipal waste	approximately 8 acres	1965 - 1980	1965 - 1980	Landfill

[11]

In 1991, the town contracted Columbia Environmental Drilling to install four methane monitoring wells to monitor ambient methane gas levels in and around the landfill area [11]. High (ambient) readings were encountered during one well installation [11]. No other methane monitoring data is available [11].

On May 25, 1995, CDM Federal conducted an onsite reconnaissance of the Weston Landfill. The landfill area appeared to be well covered and seeded. Dense vegetation was noted throughout the property. A pond to the north of the access road drained through a culvert towards the south along the western landfill boundary. The stream appeared reddish brown upon exiting the culvert, near the former dog pound. The recycling station was observed to be in use by the public. Wetlands were observed surrounding the landfill area [1].

On July 19, 1995, CDM Federal sampled the unnamed stream along the wetland drainage pathway as well as four of the nearest residential private drinking water wells (see Figure 3: Site Sketch with CDM Federal Sampling Locations). Samples were collected in accordance with the *Task Work Plan for Onsite Reconnaissance and Sampling at Weston Landfill*, dated June 30, 1995, and approved by EPA. Analytical results were evaluated according to EPA Contract Laboratory Program (CLP) Tier II data validation protocols. Data quality objectives (DQOs) established for the sampling event were met. It has previously been assumed that all affected residences are connected to the Ravenwood Supply Wells. However, several residences with private drinking water wells are located along [REDACTED]. Sampling results are summarized in the Waste/Source Sampling, Groundwater, and Surface Water Pathway sections of this report [1,12,13,14].

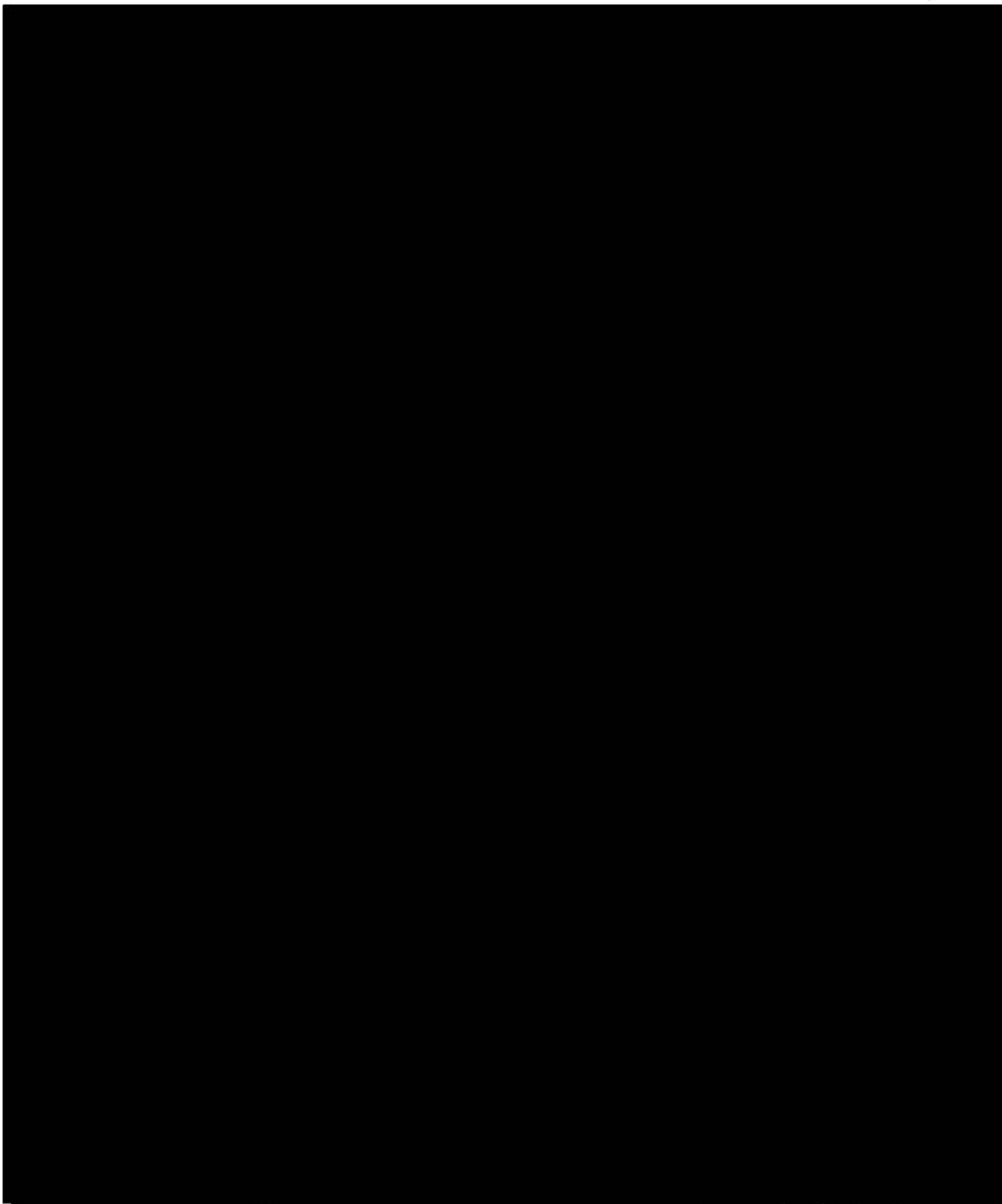
There are three Resource Conservation and Recovery Information System (RCRIS) sites in the town of Weston including two small quantity generators (Laidlaw Transit and Weston Valet Inc.) and one conditionally exempt small quantity generator (Weston Board of Education). Weston Landfill is the only Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) site in Weston [18,19].

WASTE/SOURCE SAMPLING

In 1990, NUS collected three soil samples and four sediment source samples from the landfill (see Figure 2). The soil sample collected from location SS-02 was designated the reference soil sample. The sediment sample collected from location SD-02 was designated the reference sediment sample [11].

All samples were analyzed through the CLP for Target Compound List VOCs, extractable organic compounds, and inorganic elements, except for the trip blank, which was not analyzed for inorganic elements. All soil samples were analyzed on a dry weight basis. Note that sample results qualified by a "J" on the tables are considered approximate due to limitations identified during the quality control review [11].

Table 3 is a summary of compounds and analytes detected in samples collected by NUS. A compound or analyte is listed if the concentration detected in the sample is greater than three times the concentration of the same compound or element detected in the reference sample. The sample quantitation limit (SQL) or sample detection limit (SDL) is used as a reference value if the compound or analyte was not detected in the reference sample [11]. Complete analytical results are presented in Attachment C.



SITE SKETCH WITH CDM FEDERAL SAMPLING LOCATIONS
WESTON LANDFILL
WESTON, CONNECTICUT



CDM FEDERAL PROGRAMS CORPORATION
11111 11111 11111 11111 11111 11111

Figure 3

TABLE 3

**Summary of NUS Analytical Results
Source Sample Analysis for Weston Landfill**

Sample Location No.	Compound/Analyte	Concentration	Reference Concentration	Comments
SD-01	2-Butanone	180 ppb	51 U ppb	3.5 X SQL
	Acenaphthylene	1,100 ppb	850 U ppb	1.3 X SQL
	Benz(a)anthracene	2,300 ppb	850 U ppb	2.7 X SQL
	Benzo(a)pyrene	1,700 ppb	850 U ppb	2 X SQL
	Benzo(b)fluoranthene	2,500 ppb	120 J ppb	20.8 X REF
	Benzo(k)fluoranthene	2,300 ppb	110 J ppb	20.9 X REF
	Chrysene	2,500 ppb	91 J ppb	27.5 X REF
	Fluoranthene	3,000 ppb	200 J ppb	15 X REF
	Phenanthrene	1,200 ppb	120 J ppb	10 X REF
	Pyrene	4,400 ppb	220 J ppb	20 X REF
	Aluminum	17,800 J ppm	3,050 J ppm	5.8 X REF
	Arsenic	9.2 ppm	2.3 ppm	4 X REF
	Barium	160 ppm	32.9 ppm	4.9 X REF
	Chromium	34.4 J ppm	4.0 J ppm	8.6 X REF
	Cobalt	12.7 ppm	1.9 ppm	6.7 X REF
	Copper	31.1 ppm	0.9 U ppm	34.6 X SDL
	Iron	35,100 J ppm	2,020 J ppm	17.4 X REF
	Magnesium	7,970 ppm	970 ppm	8.2 X REF
	Manganese	310 J ppm	68.7 J ppm	4.5 X REF
	Nickel	24.9 ppm	5.3 ppm	4.7 X REF
	Potassium	4,440 ppm	1,230 ppm	3.6 X REF
	Sodium	196 ppm	8.3 U ppm	23.6 X SDL
	Vanadium	55.4 ppm	10.0 ppm	5.5 X REF

TABLE 3 (continued)

Sample Location No.	Compound/Analyte	Concentration	Reference Concentration	Comments
SD-01 continued	Zinc	327 J ppm	33.0 J ppm	9.9 X REF
SD-03	2-Butanone	470 J ppb	140 U ppb	3.4 X SQL
	Benzo(b)fluoranthene	1,100 J ppb	120 J ppb	9.2 X REF
	Benzo(k)fluoranthene	980 J ppb	110 J ppb	8.9 X REF
	Chrysene	840 J ppb	91 J ppb	9.2 X REF
	Fluoranthene	1,400 J ppb	200 J ppb	7 X REF
	Phenanthrene	500 J ppb	120 J ppb	4.2 X REF
	Pyrene	1,400 J ppb	220 J ppb	6.4 X REF
	Aluminum	31,300 J ppm	3,050 J ppm	10.3 X REF
	Arsenic	9.6 ppm	2.3 ppm	4.2 X REF
	Barium	401 ppm	32.9 ppm	12.2 X REF
	Chromium	55.5 J ppm	4.0 J ppm	13.9 X REF
	Cobalt	23.0 ppm	1.9 ppm	12.1 X REF
	Copper	140 ppm	1.0 U ppm	140 X SDL
	Iron	56,200 J ppm	2,020 J ppm	27.8 X REF
	Lead	237 J ppm	47.3 J ppm	5.0 X REF
	Magnesium	11,300 ppm	970 ppm	11.6 X REF
	Manganese	355 J ppm	68.7 ppm	5.2 X REF
	Mercury	0.61 J ppm	0.26 U ppm	2.3 X SDL
	Nickel	49.7 ppm	5.3 ppm	9.4 X REF
	Potassium	5,420 ppm	1,230 ppm	4.4 X REF
	Vanadium	74.7 ppm	10.0 ppm	7.5 X REF
	Zinc	850 J ppm	33.0 J ppm	25.8 X REF
SD-04	2-Butanone	130 ppb	23 U ppb	5.7 X SQL
	Benzo(b)fluoranthene	910 J ppb	120 J ppb	7.6 X REF

TABLE 3 (continued)

Sample Location No.	Compound/Analyte	Concentration	Reference Concentration	Comments
SD-04 (cont'd)	Benzo(k)fluoranthene	970 J ppb	120 J ppb	8.1 X REF
	Chrysene	840 J ppb	91 J ppb	9.2 X REF
	Fluoranthene	1,400 J ppb	200 J ppb	7 X REF
	Phenanthrene	590 J ppb	120 J ppb	4.9 X REF
	Pyrene	1,600 J ppb	220 J ppb	7.3 X REF
	Aluminum	15,500 J ppm	3,050 J ppm	5.1 X REF
	Arsenic	7.2 ppm	2.3 ppm	3.1 X REF
	Barium	139 ppm	32.9 ppm	4.2 X REF
	Chromium	30.7 J ppm	4.0 J ppm	7.7 X REF
	Cobalt	12.6 ppm	1.9 ppm	6.6 X REF
	Copper	42.0 ppm	1.1 U ppm	38.2 X SDL
	Iron	27,900 J ppm	2,020 J ppm	13.8 X REF
	Magnesium	7,260 ppm	970 ppm	7.5 X REF
	Manganese	253 J ppm	68.7 J ppm	3.7 X REF
	Nickel	22.3 ppm	5.3 ppm	4.2 X REF
	Sodium	624 ppm	10.2 U ppm	61.2 X SDL
	Vanadium	42.6 ppm	10.0 ppm	4.3 X REF
	Zinc	280 ppm	33.0 J ppm	8.5 X REF

REF = Reference concentration.

J = Quantitation approximate due to limitations identified in quality control review.

U = Indicates the sample was analyzed but not detected and reports the detection value.

UJ = The reported quantitation limits are qualified estimated.

ppb = Parts per billion.

ppm = Parts per million.

SDL = Sample Detection Limit

SQL = Sample Quantitation Limit

[11]

No organic compounds or inorganic elements detected in the NUS soil samples met the criteria for listing on Table 3. Several VOCs and semivolatile organic compounds detected in the sediment samples were detected at significant concentrations including 2-butanone,

benzo(k)fluoranthene, and chrysene. Several inorganic elements were detected at significant concentrations including lead and iron. Lead basins and iron sludge are known to have been disposed of at the landfill. These results are consistent with CTDEP's 1973 results which revealed elevated concentrations of lead in nearby residential wells [11].

On July 19, 1995, CDM Federal conducted sediment sampling at the outfall of the unnamed stream (visually impacted by leachate) along the western border of the landfill, where leachate seeps enter the adjacent wetland. Sediment samples were analyzed for the full Target Compound List/Target Analyte List (TCL/TAL) using the CLP Routine Analytical Services (RAS). The sediment samples (SD-03 and SD-04) were collected at the outfall along the western boundary of the landfill and compared to a background sample (SD-01) collected upstream by the unnamed pond [1,13,14].

Table 4 summarizes the source samples collected by CDM Federal at Weston Landfill. (See Table 10 and 11 for a description of additional sediment samples collected by CDM Federal.)

TABLE 4

**Source Sample Summary: Weston Landfill
Samples Collected by CDM on July 19, 1995**

Sample Location No.	Traffic Report No.	Time	Remarks	Sample Source
MATRIX: Sediment				
SD-01	AKQ50 (O) MAHK39 (I)	1145	Grab	Sediment grab sample collected from wetland adjacent to onsite pond, near entrance road to the landfill; background sample.
SD-03	AKQ52 (O) MAHK41 (I)	1100	Grab	Sediment grab sample collected from the outfall of the stream adjacent to the former dog pound.
SD-04	AKQ53 (O) MAHK42 (I)	1100	Grab	Duplicate of SD-03
EB-SD	AKQ62 (O) MAHK51 (I)	1240	Grab	Equipment blank for QC of sediment equipment decontamination procedures.

O = Organic (RAS VOC, semivolatile organic, and P/PCBs analyses)

I = Inorganic (RAS metals and cyanide analyses)

RAS = Routine Analytical Services

P/PCB = Pesticides/polychlorinated biphenyls

[13,14]

Table 5 presents a summary of compounds and analytes detected through CLP analysis of sediment samples. For each sample location, a compound or analyte is listed if it has been detected at three or more times the reference sample concentration. Compounds or analytes that occur at a concentration equal to or greater than three times the reference concentration (sample location SD-01) are designated by their approximate relative concentration above the reference

concentration. If the compound or analyte is not detected in the reference sample, the SQL (for organic analysis) or SDL (for inorganic analysis) is used as the reference value. A compound or analyte is listed by the concentration above its SQL or SDL only if it occurs at a value equal to or greater than the corresponding SQL or SDL in the reference sample.

Sample results qualified with a "J" in the analytical results tables are considered approximate because of limitations identified during CLP data validation. Organic sample results reported at concentrations below quantitation limits and confirmed by mass spectroscopy are also considered approximate and are qualified by a "J". The complete analytical results of CDM Federal sampling activities, including sample quantitation and sample detection limits, are presented in Attachment B (organic results) and Attachment C (inorganic results).

TABLE 5

**Summary of CDM Federal Analytical Results
Source Sample Analysis for Weston Landfill**

Sample Location No.	Compound/Analyte	Concentration*	Reference Concentration*	Comments
SD-03	Magnesium	6,570 mg/kg	1,740 UJ mg/kg	3.8 X SDL
	Vanadium	28.2 mg/kg	18.8 UJ mg/kg	1.5 X SDL
SD-04	Fluoranthene	2,900 J	1,300 UJ**	2.2 X SQL
	Phenanthrene	1,400 J	1,300 UJ**	1.1 X SQL
	Pyrene	2,200 J	1,300 UJ**	1.7 X SQL
	Lead	236 J mg/kg	58.4 J mg/kg	4.0 X REF
	Magnesium	6,420 mg/kg	1,740 mg/kg	3.7 X SDL
	Vanadium	20.2 mg/kg	18.8 UJ mg/kg	1.1 X SDL

- REF = Reference concentration.
J = Quantitation approximate due to limitations identified in quality control review.
R = Organic analysis: Indicates an unreliable result. The analyte may or may not be present in the sample. Additional supporting data are necessary to confirm this result. Inorganic analysis: Indicates the value is rejected.
-- = cannot be computed.
U = Indicates the sample was analyzed but not detected and reports the detection value.
UJ = The reported quantitation limits are qualified estimated.
* = Substances listed are µg/kg unless otherwise noted.
µg/kg = Micrograms per kilogram.
SDL = Sample Detection Limit
SQL = Sample Quantitation Limit.
** = Detected below the SQL; the SQL is used as the reference concentration.

[13,14]

All substances have been detected in previous onsite sediment sampling. Due to the various industrial and metal wastes disposed at the landfill, the detected substances may be considered attributable to this source area.

GROUNDWATER PATHWAY

Overburden material in the area consists of 8 to 15 feet of fill material underlain by 5 to 7 feet of organic peat. Below the organic peat is an additional 4 feet of fine to coarse grained sand [11]. Bedrock exists at approximately 20 feet below ground surface (bgs) and is comprised of an unnamed white to pink, foliated granitic schist [25].

Depth to groundwater at the landfill is 6 to 8 feet bgs [16]. An exact direction of groundwater flow has not been determined; however, previous investigations have indicated that affected wells are to the southwest of the landfill [15]. The Ravenwood Supply Wells, located approximately [REDACTED] mile [REDACTED] of the landfill property, are the only public water supply within 4 miles of the landfill and serve approximately 75 people. An estimated 16,017 people are served by private wells within 4 miles of the landfill [7]. Estimates at the population served by private wells are derived by summing the total number of drilled and dug wells within each CENTRACTS block (a Cartesian data management system used by the Census Bureau) and multiplying this total by the average number of people (2.7) in each household. There are no wellhead protection areas within 4 miles of Weston Landfill [6]. Groundwater in the vicinity of the landfill is classified by CTDEP as GB/GA indicating that this area is presumed to be contaminated due to existing activities [3]. Tables 6 and 7 summarize the public and private drinking water sources within 4 miles of the Weston Landfill.

TABLE 6

**Public Groundwater Supply Sources within 4 Miles of
Weston Landfill**

Distance/ Direction from Property	Source Name	Location of Source (Town)	Estimated Population Served	Source Type*
[REDACTED]	Ravenwood Supply Wells	Weston	75	bedrock

*Overburden, Bedrock, or Unknown
[11]

TABLE 7**Estimated Drinking Water Populations Served by Groundwater Sources
within 4 Miles of Weston Landfill**

Radial Distance from Weston Landfill (miles)	Estimated Population Served by Private Wells	Estimated Population Served by Public Wells	Total Estimated Population Served by Groundwater Sources within the Ring
0.00 - 0.25	53	75	128
> 0.25 - 0.50	158	0	158
> 0.50 - 1.00	657	0	657
> 1.00 - 2.00	2,909	0	2,909
> 2.00 - 3.00	4,535	0	4,535
> 3.00 - 4.00	7,705	0	7,705
TOTAL	16,017	75	16,092

[7,11]

Groundwater studies performed in 1973 indicated that the landfill had adversely affected the groundwater in the vicinity of the property. As a result, the town of Weston installed three wells, [REDACTED] of the landfill, to supply the local population living on the adjacent portions of Godfrey Road and Ravenwood Drive. Recent drinking water studies, by the town of Weston, from residences connected to these wells have not indicated contamination in these wells [9,11].

On July 19, 1995, CDM Federal collected six unfiltered drinking water samples, including a reference sample and a duplicate, to determine if groundwater contaminants have migrated to residential wells to the [REDACTED] and [REDACTED] of the landfill area (see Figure 3). The samples were collected from private wells located [REDACTED] of the landfill on [REDACTED] (DW-02 and DW-03) and [REDACTED] of the landfill on [REDACTED] (DW-04 and DW-05/06). A reference sample was collected from the Ravenwood Supply Wells located [REDACTED] of the landfill property via the pumphouse located [REDACTED] of the landfill. Wells equipped with filtration units were sampled from valves located before the filters. The samples were analyzed for VOCs by EPA Method 524.2 via Special Analytical Services (SAS). Samples were analyzed for SVOCs, pesticides/PCBs, and TAL inorganics via RAS. The organic and inorganic results were reviewed according to Tier II validation protocol. Table 8 describes the drinking water samples collected by CDM Federal.

TABLE 8

**Tap Water Sample Summary: Weston Landfill
Samples Collected by CDM Federal on July 19, 1995**

Sample Location No.	CDM Sample #/ Traffic Report #	Time (hrs)	Remarks	Sample Source
DW-01	AKQ54 (O) MAHK43 (I) E0471DW01(SAS)	1130	Grab	Tap water sample collected from the Ravenwood Supply Wells located [REDACTED] of the landfill via pumphouse [REDACTED] of landfill; background sample.
DW-02	AKQ55 (O) MAHK44 (I) E0471DW02(SAS)	1215	Grab	Tap water sample collected from Gallo residence at [REDACTED], near landfill; characterize contaminant migration.
DW-03	AKQ56 (O) MAHK45 (I) E0471DW03(SAS)	1330	Grab	Tap water sample collected from Green residence at [REDACTED] near landfill; characterize contaminant migration.
DW-04	AKQ57 (O) MAHK46 (I) E0471DW04(SAS)	1430	Grab	Tap water sample collected from Pugh residence at [REDACTED] near landfill; characterize contaminant migration.
DW-05	AKQ58 (O) MAHK47 (I) E0471DW05(SAS)	1030	Grab	Tap water sample collected from Murphy residence at [REDACTED], near landfill; characterize contaminant migration.
DW-06	AKQ59 (O) MAHK48 (I) E0471DW06(SAS)	1030	Grab	Duplicate of DW-05.

I = Inorganic (RAS metals and cyanide analyses)
 O = Organic (semivolatile organic, and P/PCB analyses)
 P/PCB = Pesticides/polychlorinated biphenyls
 RAS = Routine Analytical Services
 SAS = Special Analytical Services for VOCs only.

Table 9 presents a summary of compounds and analytes detected through CLP analysis of sediment samples. For each sample location, a compound or analyte is listed if it has been detected at three or more times the reference sample concentration. Compounds or analytes that occur at a concentration equal to or greater than three times the reference concentration (sample location DW-01) are designated by their approximate relative concentration above the reference concentration. If the compound or analyte is not detected in the reference sample, the SQL (for organic analysis) or SDL (for inorganic analysis) is used as the reference value. A compound or analyte is listed by the concentration above its SQL or SDL only if it occurs at a value equal to or greater than the corresponding SQL or SDL in the reference sample.

Sample results qualified with a "J" in the analytical results tables are considered approximate because of limitations identified during CLP data validation. Organic sample results reported at concentrations below quantitation limits and confirmed by mass spectroscopy are also considered approximate and are qualified by a "J". The complete analytical results of CDM Federal sampling activities, including sample quantitation and sample detection limits, are presented in Attachment A (SAS organic results), Attachment B (RAS organic results), and Attachment C (inorganic results).

TABLE 9

**Summary of Analytical Results
Drinking Water Sample Analysis for
Weston Landfill**

Sample Location No.	Compound/Analyte	Concentration (µg/l)	Reference Concentration (µg/l)	Comments	MCL (µg/l)
DW-02	Barium	21.8	4.8 U	4.5 X SDL	2,000
	Copper	93.5	30.3 U	3.1 X SDL	1,300
	Manganese	35.5	17.3 U	2.1 X SDL	NL
DW-03	Copper	55.2	30.3 U	1.8 X SDL	1,300
DW-05	Barium	24.5	4.8 U	5.1 X SDL	2,000
	Iron	15,800	130 U	121.5 X SDL	NL
	Magnesium	8,850	2,560	3.5 X REF	NL
	Manganese	723	17.3 U	41.8 X SDL	NL
DW-06	Barium	24.3	4.8 U	5.1 X SDL	2,000
	Iron	15,400	130 U	118.5 X SDL	NL
	Lead	105 J	1.6 UJ	65.6 X SDL	TT
	Magnesium	8,650	2,560	3.4 X REF	NL
	Manganese	704	17.3 U	40.7 X SDL	NL

REF = Reference concentration.

J = Quantitation approximate due to limitations identified in quality control review.

U = Indicates the sample was analyzed but not detected and reports the detection value.

UJ = The reported quantitation limits are qualified estimated.

µg/l = Micrograms per liter.

SDL = Sample detection limit.

MCL = Maximum Containment Level.

TT = Lead action level is 15 µg/l.

NL = Not listed.

[12,13,14,18]

No organics were detected above detection limits in the tap water samples collected. Barium, copper, iron, lead, magnesium, and manganese were all detected either above detection limits or three times (or greater) above the reference sample (DW-01) concentrations. Each of the elements listed in Table 9 have been detected in previous onsite sediment sampling (see Table 3). Lead was detected in DW-06 (105 J $\mu\text{g/l}$) above the EPA action level of 15 $\mu\text{g/l}$ but was not detected in the duplicate sample DW-05.

SURFACE WATER PATHWAY

An unnamed stream flows south from a pond and wetland area located to the northwest of the landfill. Upon exiting a concrete culvert adjacent to the dog pound, the stream water is visibly discolored compared to its appearance where it first enters the culvert near the pond. The probable point of entry (PPE) of contaminants into the surface water pathway occurs at some point within the underground conduit [1]. The unnamed stream and other surface water runoff in the area drains approximately 0.5 mile south-southwest into Jennings Brook. Jennings Brook flows at approximately 0.067 cubic feet per second (cfs) southeast for approximately 1.5 miles and drains into the Saugatuck River [11]. The Saugatuck River flows at approximately 41.7 cfs southward, for 8.5 miles, eventually emptying into the Long Island Sound at Westport, Connecticut. The surface water drainage pathway continues for an additional 4.5 miles into the Long Island Sound [21,26].

Wetlands are present on and around the immediate property [17]. Approximately 0.5 mile of wetland frontage exists along the drainage channel of the unnamed stream that flows along the western boundary of the landfill. There are approximately 1.5 miles of wetland frontage along the Jennings Brook portion of the surface water pathway. There are approximately 1.5 miles of wetland frontage along the Saugatuck River portion of the surface water pathway [21]. There is one state endangered species potentially associated within the surface water pathway. There is no information on fishing or recreation occurring in Jennings Brook (unlikely due to the low flow rate). The Saugatuck River is used for fishing and boating. There are no drinking water intakes on the surface water pathway [11]. Both Jennings Brook and the Saugatuck River are classified by CTDEP as B/A surface water bodies indicating that these water bodies are threatened by a source of pollution. The Long Island Sound is classified as SB/SA indicating that it is also threatened by a source of pollution [3].

Table 10 summarizes each segment of the 15-mile downstream surface water pathway.

TABLE 10**Water Bodies within the Surface Water Segment of
Weston Landfill**

Surface Water Body	Descriptor ^a	Length of Reach (miles)	Flow Characteristics (cfs) ^b	Length of Wetlands
Unnamed stream	Minimal stream	0.5	< 10	0.5 mile
Jennings Brook	Minimal stream	1.5	0.067	1.5 miles
Saugatuck River	Minimal stream	8.5	41.7	1.5 miles
Long Island Sound	Coastal tidal waters	4.5	Not applicable	Not applicable

^a Minimal stream. Small to moderate stream. Moderate to large stream. Large stream to river. Very large river. Coastal tidal waters. Shallow ocean zone or Great Lake. Deep ocean zone or Great Lake. Three-mile mixing zone in quiet flowing river.

^b Cubic feet per second.

[1,2,11,22,23,24]

In 1991, NUS collected sediment samples from the two ponds northwest and northeast of the landfill, and from the northern and southern landfill area boundaries (see Figure 2). Sediment samples were analyzed for VOCs, extractable organic compounds, and inorganic elements. Several organic compounds and inorganic analytes including lead (237,000 J ppb), 2-butanone (470 J ppb), and chrysene (2,500 ppb) were detected in the onsite sediment samples [11]. (See the Waste/Source Sampling Section of this report for a summary of substances detected.)

On July 19, 1995, CDM Federal sampled the unnamed stream along the wetland drainage pathway to determine if 0.1 mile wetland contamination exists due to landfill leachate migration. Though there are numerous patches of wetland area on and around the landfill, this stretch of wetland sampled follows the general drainage path of the area and was visibly impacted by leachate.

Sediment samples were analyzed for the full TCL/TAL using EPA CLP RAS. The wetland sediment samples SD-03 and (duplicate) SD-04 were collected near the outfall of the unnamed stream. Sediment sample SD-02 was collected 0.1 mile into the wetland (downstream). Concentrations of substances in all three sediment samples were compared to reference sample SD-01, collected adjacent to the onsite pond northwest of the landfill. Table 11 summarizes the sediment samples collected by CDM Federal.

TABLE 11

**Sediment Sample Summary: Weston Landfill
Samples Collected by CDM Federal on July 19, 1995**

Sample Location No.	CDM Sample #/ Traffic Report #	Time (hrs)	Remarks	Sample Source
SD-01	AKQ50 (O) MAHK39 (I)	1145	Grab	Sediment grab sample collected from wetland adjacent to onsite pond, near entrance road to the landfill; background sample.
SD-02	AKQ51 (O) MAHK40 (I)	1020	Grab	Sediment grab sample collected 550 feet downstream from SD-03/04, in the wetland stream which drains south from the onsite pond; to establish 0.1 mile wetland contamination.
SD-03	AKQ52 (O) MAHK41 (I)	1100	Grab	Sediment grab sample collected from the outfall of the stream adjacent to the former dog pound; to establish 0.1 mile wetland contamination.
SD-04	AKQ53 (O) MAHK42 (I)	1100	Grab	Duplicate of SD-03.

I = Inorganic (RAS metals and cyanide analyses)
 O = Organic (RAS volatile organic, semivolatile organic, and P/PCB analyses)
 P/PCB = Pesticides/polychlorinated biphenyls
 RAS = Routine Analytical Services

Table 12 presents a summary of compounds and analytes detected through CLP analysis of sediment samples. For each sample location, a compound or analyte is listed if it has been detected at three or more times the reference sample concentration. Compounds or analytes that occur at a concentration equal to or greater than three times the reference concentration (sample location SD-01) are designated by their approximate relative concentration above the reference concentration. If the compound or analyte is not detected in the reference sample, the SQL (for organic analysis) or SDL (for inorganic analysis) is used as the reference value. A compound or analyte is listed by the concentration above its SQL or SDL only if it occurs at a value equal to or greater than the corresponding SQL or SDL in the reference sample.

Sample results qualified with a "J" in the analytical results tables are considered approximate because of limitations identified during CLP data validation. Organic sample results reported at concentrations below quantitation limits and confirmed by mass spectroscopy are also considered approximate and are qualified by a "J". The complete analytical results of CDM Federal sampling activities, including sample quantitation and sample detection limits, are presented in Attachment B (organic results) and Attachment C (inorganic results).

TABLE 12

**Summary of Analytical Results
Sediment Sample Analysis for Weston Landfill**

Sample Location No.	Compound/Analyte	Concentration*	Reference Concentration*	Comments
SD-02	Fluoranthene	1,500	1,300 UJ**	1.2 X SQL
	Magnesium	4,710 mg/kg	1,740 UJ mg/kg	2.7 X SDL
	Vanadium	28.1 mg/kg	18.8 UJ mg/kg	1.5 X SDL
SD-03	Magnesium	6,570 mg/kg	1,740 UJ mg/kg	3.8 X SDL
	Vanadium	28.2 mg/kg	18.8 UJ mg/kg	1.5 X SDL
SD-04	Fluoranthene	2,900 J	1,300 UJ**	2.2 X SQL
	Phenanthrene	1,400 J	1,300 UJ**	1.1 X SQL
	Pyrene	2,200 J	1,300 UJ**	1.7 X SQL
	Lead	236 J mg/kg	58.4 J mg/kg	4.0 X REF
	Magnesium	6,420 mg/kg	1,740 UJ mg/kg	3.7 X SDL
	Vanadium	20.2 mg/kg	18.8 UJ mg/kg	1.1 X SDL

REF = Reference concentration.

J = Quantitation approximate due to limitations identified in quality control review.

U = Indicates the sample was analyzed but not detected and reports the detection value.

UJ = The reported quantitation limits are qualified estimated.

µg/kg = Micrograms per kilogram

mg/kg = Milligrams per kilogram

SDL = Sample Detection Limit

SQL = Sample Quantitation Limit

* = All substances reported in µg/kg unless otherwise noted.

** = Detected below the SQL; the SQL is reported as the Reference Concentration.

[13,14]

All substances have been detected in previous onsite sediment sampling. Magnesium, and vanadium were detected in samples collected within the wetland at a distance of 0.1 mile and above the SQL and SDL of the reference sample (SD-01). Other substances detected in both wetland sample locations are not included in Table 12 due to the rejection of data of these substances in the reference sample.

SOIL EXPOSURE PATHWAY

The Weston Landfill occupies approximately 8 acres, considered to be the source area, in the center of a 53-acre property. The landfill is currently maintained with 2-foot soil cover. Vehicular access to the landfill is controlled from Godfrey Road by a gate and road. Pedestrian access around the remaining perimeter is unrestricted. The nearest resident is located approximately 225 feet east of the Weston Landfill. There are no known schools or day-care centers located within 200 feet of the property [21]. There are two employees working at the transfer station onsite [1].

In 1991, NUS collected two soil samples and a duplicate sample from the western and eastern border of the landfill. Samples were analyzed for the presence of VOCs, extractable organic compounds, and inorganic elements. No VOCs, extractables, or metals were detected at concentrations higher than three times above the background sample concentration (See the Waste/Source Sampling Section and Attachments) [11].

During the CDM Federal onsite reconnaissance, the landfill appeared to be fully covered and well seeded with no exposed debris or eroded surfaces [1].

AIR PATHWAY

There are two full-time employees on the property [1]. There are an estimated 17,740 people living within 4 miles of the Weston Landfill [7]. The nearest resident is approximately 225 feet east of the landfill area. The Weston Jr. High School has 619 students and is located approximately 2.2 miles southwest of the landfill [6B,16]. There are approximately 630 acres of wetlands within 4 miles of the landfill [21,22,23,24]. One state endangered species has been documented in two locations within 4 miles of the property [10]. There are four methane monitoring wells located at the site which serve as preventive ventilation for the landfill. No air sampling has been conducted from the methane monitoring wells [6C].

Table 13 summarizes the estimated residential population within 4 miles of Weston Landfill.

TABLE 13**Estimated Population within 4 Miles of Weston Landfill**

Radial Distance from Weston Landfill (miles)	Estimated Population
0.00 - 0.25	57
> 0.25 - 0.50	166
> 0.50 - 1.00	684
> 1.00 - 2.00	3,022
> 2.00 - 3.00	5,335
> 3.00 - 4.00	8,476
TOTAL	17,740

[4,6B]

Levels above background were not detected while performing organic vapor monitoring during the sample event by CTDEP and the onsite reconnaissance and sampling event by CDM Federal. No other air sampling data is available to date.

SUMMARY

The Weston Landfill is located on Godfrey Road in Weston, Connecticut. The property is comprised of a transfer station, gatehouse, and landfill area (approximately 8 acres). The landfill was in use by Ansen Morton as a burning dump; however, his activities are unknown. The town of Weston purchased the property in 1965 and operated a municipal landfill until its closure in 1980. The town has been operating a transfer station on the property since 1978. The landfill has accepted industrial, municipal and septic wastes as well as scrap metal, demolition wastes, lead basins, and iron oxide sludge. Currently, the landfill is covered with 2 feet of soil approved by the Connecticut Department of Environmental Protection (CTDEP).

Depth to groundwater at the landfill ranges from 6 to 8 feet below ground surface. The Ravenwood Supply Wells, located approximately [REDACTED] mile [REDACTED] of the landfill property, are the only public water supply within 4 miles of the landfill and serve approximately 75 people. An estimated 16,017 people are served by private wells within 4 miles of the landfill.

An unnamed stream flows south from a pond and wetland area located to the northwest of the landfill. Upon exiting a concrete culvert adjacent to the dog pound, the stream water is visibly discolored compared to its appearance where it first enters the culvert near the pond. The probable point of entry (PPE) of contaminants into the surface water pathway occurs at some point within the underground conduit. Surface water runoff from the Weston Landfill drains approximately 0.5 mile south-southwest into Jennings Brook. Jennings Brook flows at approximately for approximately 1.5 miles and drains into the Saugatuck River. The Saugatuck River flows at approximately for 8.5 miles, eventually emptying into the Long Island Sound at Westport, Connecticut. The surface water drainage pathway continues for an additional 4.5 miles into the Long Island Sound.

There is one state endangered species potentially associated within the surface water pathway. There is no information on fishing or recreation occurring in Jennings Brook (although both are unlikely due to the low flow rate). The Saugatuck River is used for fishing and boating. There are no drinking water intakes on the surface water pathway.

The landfill is currently maintained with a 2-foot soil cover. Vehicular access to the landfill is controlled from Godfrey Road by a gate and road. Pedestrian access around the remaining perimeter is unrestricted. The nearest resident is located approximately 225 feet east of the Weston Landfill. There is no resident population. There are no known schools or day-care centers located within 200 feet of the property. There are two employees working at the transfer station onsite.

Investigations regarding groundwater contamination by the landfill began in 1973 due to complaints from nearby residents regarding the quality of their drinking water based on odor, color, and turbidity. In August 1973, at the request of the town, Geraghty & Miller, Inc. investigated the effect of landfill leachate on groundwater quality in the town of Weston. The investigation concluded that "the groundwater under an area of Ravenwood Drive (located to the southwest of the landfill) almost certainly has been contaminated by leachate from the Town landfill". In 1974, a court ordered the town to supply water to the affected residents while further investigations were to be conducted.

In 1976, two groundwater supply wells were installed [REDACTED] of Godfrey Road and the landfill to serve 30 homes on Ravenwood Drive. From 1975 to 1980, CTDEP noted continuous leachate problems as well as the probability for groundwater pollution problems.

In 1984, CTDEP conducted a PA at the Weston Landfill that recommended a medium priority screening site inspection. In 1990, NUS conducted an SI which included 3 soil samples and 4 sediment samples from the landfill. All samples were analyzed via EPA's Contract Laboratory Program (CLP) for volatile organic compounds (VOCs), extractable organic compounds, and inorganic elements. Several organic compounds and inorganic elements were detected in sediment samples SD-01, SD-03 and SD-04 at concentrations exceeding 3 times the background (SD-02) concentrations, including lead, 2-butanone, and chrysene.

On July 19, 1995, CDM Federal sampled the unnamed stream along the wetland drainage pathway as well as four of the nearest residential private drinking water wells (see Figure 3: Site Sketch With CDM Federal Sampling Locations). It has previously been assumed that all affected residences are connected to the Ravenwood Supply Wells. However, several residences with private drinking water wells are located along [REDACTED] and had not been previously sampled.

No organics or pesticides/PCBs were detected in drinking water samples above detection limits in the tap water samples collected. Barium, copper, iron, lead, magnesium, and manganese were all detected either above detection limits or three times (or greater) above the reference sample (DW-01) concentrations. Each of the elements detected in drinking water samples have been detected in previous onsite sediment sampling. Lead was detected in DW-06 (105 J micrograms per liter ($\mu\text{g/l}$)) above the EPA action level of 15 $\mu\text{g/l}$ but was not detected in the duplicate sample DW-05.

All substances detected at significant concentrations in CDM Federal sediment sampling have been detected in previous onsite sediment sampling. Magnesium and vanadium were detected in samples collected within the wetland at a distance of 0.1 mile.

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ATTACHMENT A

Weston Landfill

**SAS Volatile Organic Sampling Results
CDM Federal**

July 19, 1995

ATTACHMENT B

Weston Landfill

**RAS Volatile Organic Sampling Results
CDM Federal**

July 19, 1995

ATTACHMENT C

Weston Landfill

**Inorganic Sampling Results
CDM Federal**

July 19, 1995

ATTACHMENT D

Weston Landfill

**Sampling Results Summary
NUS Corporation**

May 16, 1991